

Crohn's Disease With Enterolith Treated Laparoscopically

Mark W. Jones, DO, Brian Koper, DO, William F. Weatherhead, DO

ABSTRACT

Symptomatic enteroliths are relatively rare. Most occur from ingestion of undigestible materials such as pits or bones. Primary enteroliths are usually from the condition of partial bowel obstruction, diverticular type diseases such as Meckel's or congenital bands. Gallstone ileus is also a more common cause of gastrointestinal stones. Enteroliths associated with Crohn's disease is an extremely rare condition with fewer than 25 cases reported in the literature. Presented herein is such a case successfully treated laparoscopically.

Key Words: Enterolith, Crohn's disease, Laparoscopy.

INTRODUCTION

Crohn's disease can present with many different symptoms. Bowel obstruction, bleeding, and diarrhea are all frequently encountered with Crohn's disease. Enteroliths, on the other hand, are rarely seen in Crohn's patients. The vast majority of these patients also had a long history of known Crohn's disease (7 or more years).¹ In only one other case reported in the literature was the diagnosis of Crohn's disease made at the time of surgery. This case shows that diagnosis and treatment can easily be achieved laparoscopically.

CASE REPORT

An 83-year-old female presented with a several-year history of intermittent periumbilical pain, constipation, and chronic anemia. Her other pertinent history included hypothyroidism and hypertension. She had an appendectomy in the 1940s and multiple drug allergies. Significant laboratory findings included a 30.6 hematocrit. Upper and lower endoscopies were unremarkable. Computed tomographic scan of the abdomen and pelvis and small bowel contrast studies showed a laminated 3-cm enterolith in the proximal ileum with a segment of thickened small bowel wall (**Figures 1 and 2**). No gallstones were present, and the terminal ileum appeared normal.

At the time of surgery, 2 areas of inflammation, grossly consistent with Crohn's disease, were identified in the distal ileum. The remainder of the large and small bowel were examined laparoscopically and appeared normal. A laparoscopically assisted extracorporeal segmental resection with removal of the enterolith was carried out.

After a uneventful 5-day hospital stay, the patient was discharged home. The pathology report revealed a 2.7-cm enterolith (**Figure 3**). Crohn's disease was found in a 21-cm segment of small bowel, with severe narrowing. A hemorrhagic pressure ulcer was also found in the mucosa from this enterolith.

DISCUSSION

Less than 25 cases of primary enteroliths associated with Crohn's disease are reported in the literature. Most of

Ingham Regional Medical Center Lansing, Michigan, USA (all authors).

Address reprint requests to: Mark W. Jones, DO, 1650 Ramblewood Dr, Ste 200, Lansing, MI 48823, USA. Telephone: 517 332 0200, Fax: 517 332 0963, E-mail: MJones9006@AOL.COM

© 2005 by JSLS, *Journal of the Society of Laparoendoscopic Surgeons*. Published by the Society of Laparoendoscopic Surgeons, Inc.



Figure 1. Computed tomographic scan demonstrating intraluminal small bowel enterolith.



Figure 2. Plain x-ray showing laminated intraabdominal stone.

these were found in patients with a long history of known disease (7 or more years). Crohn's enteroliths are usually found within an affected segment of bowel, most often in the terminal ileum, but they can occur anywhere throughout the gastrointestinal (GI) tract.^{2,3}



Figure 3. 2.7-cm enterolith found at the time of surgery.

Enteroliths can be primary, formed inside the bowel, or secondary, formed outside the GI tract, such as in gallstone ileus. More common causes of enterolith formation are seen in conditions of stasis such as with Meckel's diverticulum, congenital strictures, chronically incarcerated hernias, radiation enteritis, blind pouches from GI anastomosis and jejunal diverticulum.⁴ Gallstone ileus is also a more frequent condition seen with enterolith formation.

Two types of primary enteroliths exist: true and false. True enteroliths are formed from precipitation of material normally found in the GI tract (*succus entericus*). Calcium salts such as Ca^{++} carbonate, Ca^{++} oxalate, and Ca^{++} phosphate are usually responsible for stone formation in the alkaline environment of the distal small bowel.

These enteroliths are opaque and can be identified on x-ray. Choleic acid stones are formed in the acidic material of the proximal GI tract and are radiolucent. These types of enteroliths are reported exclusively in woman in the duodenum and jejunum.³

False enteroliths are formed from concretion build-up of undigestible foreign materials such as seeds, bone, vegetable matter (phytobezoar), hair (trichobezoar), barium sulfate, and other manmade items.^{4,5}

Symptoms from enteroliths are usually those of intermittent obstruction, but there have been cases of acute complete bowel obstruction. Many patients were also found to have refractory chronic anemia.⁶ Solitary or multiple stones can be found either proximal to or within the strictured bowel segment. Singular and multiple strictures have also been reported.^{7,8}

Other factors must be considered in Crohn's disease with enteroliths. These patients may exhibit a higher incidence of gallstones as a result of bile salt depletion from disease of the terminal ileum. This in turn increases the risk of gallstone ileus. Active Crohn's disease of 10-year duration or more increases the risk of GI cancers. Several cases have been reported in which adenocarcinoma was found in strictured Crohn's bowel associated with enteroliths.^{4,5}

Several methods of treatment have been proposed. Endoscopic balloon dilatation has been successfully accomplished. Following dilatation, the enterolith passed spontaneously. Operative segmental stricturoplasty has also been successful. Dilatation and surgical stricturoplasty have a 65% long-term cure with a 5% complication rate.⁶ If a resection is not done, then the presence of cancer must carefully be assessed intraoperatively.

The most definitive treatment for Crohn's enterolith is segmental resection with stone removal. This has mostly been done through open laparotomy, but there has been one other case report in which successful laparoscopic-assisted small bowel resection has been accomplished.⁸

CONCLUSION

Enteroliths can be found in many conditions. Fewer than 25 cases of Crohn's disease with associated enteroliths have been reported. Due to the increased incidence of cancer and stricture recurrence in patients with Crohn's disease, segmental resection with stone removal is the most definitive treatment. Laparoscopic-assisted resection offers access to the entire GI tract for examination and allows for less trauma to the patient, resulting in a more expedient recovery.

References:

1. Mendes Ribeiro HK, Nolan DJ. Enterolithiasis in Crohn's disease. *Abdom Imaging*. 2000;25:526–529.
2. Meade P, McDonnell B, Fellows D, Holtzmuller KC, Runke L. Enteroliths causing intermittent obstruction in a patient with Crohn's disease. *Am J Gastroenterol*. 1991;86(1):96–98.
3. Zeit RM. Enterolithiasis associated with ileal perforation in Crohn's disease. *Am Coll Gastroenterol*. 1979;72(6):662–664.
4. Bruni R, Chirco L, Rossi Lemfni A, Petrocca S. Intermittent small bowel obstruction by jejunal enteroliths in a patient with a Crohn's disease stricture. *Chir Ital*. 2002;54(6):903–905.
5. Wide JM, Loughran CF, Shoker BS. Crohn's disease, calculi and cancer: a report of two cases. *Clin Radiol*. 1996;51:651–653.
6. Van Gossum A, Gay F, Cremer M. Enteroliths and Crohn's disease stricture treated by transendoscopic balloon dilation. *Gastrointest Endosc*. 1995;42(6):597.
7. Yuan JG, Sachar DB, Koganei K, Greenstein AJ. Enterolithiasis, refractory anemia, and strictures of Crohn's disease. *J Clin Gastroenterol*. 1994;18(2):105–108.
8. Shah SR, Bhaduri A, Desai DC, Abraham P, Joshi A. Obstructing enterolith as presenting feature in Crohn's disease. *Indian J Gastroenterol*. 2003;22:24.
9. Chahùdi N, De Reuck M, Allée JL. An unusual cause of subocclusion in Crohn's disease. *Aeta Chir Belg*. 1995;95:52–54.
10. Roy DD. Enterolithiasis in Crohn's disease. *J Indian Med Assoc*. 1996;94(4):162.